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GOVERNMENT OF INDIA
MINISTRY OF COMMERCE

REPORT OF THE INDIAN TARIFF BOARD

ON THE

FERRO-SILICON INDUSTRY

1947

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Dr. Nazir Ahmad, O.B.E.—*Member.*

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CONTENTS.

Para.		Page
1	Reference to the Board	1
2	Terms of reference	1
3	Method of inquiry	1
4	History of the industry	2
5	The proposed new plant at Bhadravati	3
6	Statistics relating to imports of ferro-silicon	3
7	Sources of imports	4
8	Import control	4
9	Estimated demand	4
10	Indigenous production	5
11	Raw materials and stores	5
12	Rate for electricity	5
13	Process	5
14	Uses of ferro-silicon	6
15	Quality of the indigenous product	6
16	Estimate of cost of production and fair selling price	6
17	Comments on the estimate	7
18	Fair selling prices of grades 45/50% and 20/25%	8
19	Future cost of production	9
20	Existing rate of duty	9
21	C.i.f. prices and landed cost	10
22	Comparison of the cost of imported and indigenous ferro-silicon	10
23	Protection recommended	10
24	Refund of import duty on machinery	12
25	Eligibility for protection	12
26	Summary of conclusions and recommendations	12
27	Acknowledgment	14

APPENDICES.

Page

I.—List of firms or bodies to whom the questionnaire was issued and of those who replied to it 15

II.—List of persons who attended the public hearing on the 26th, 27th and 28th May 1947 16

III.—Recent C. i.f. prices and landed costs of ferro-silicon 17

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REPORT ON THE FERRO SILICON INDUSTRY.

Reference to the Board.

An application for protection of the ferro-silicon industry was made by the Mysore Iron & Steel Works, Bhadravati, in their letter, dated the 3rd|5th of July 1946, addressed to the Department of Commerce, Government of India. The Government of India, Department of Commerce, in their Resolution No. 218-T(55)|46, dated the 12th of October 1946, read with paragraphs 2 and 7 of their Resolution of the same number, dated the 3rd of November 1945 and paragraph 4 of their Resolution bearing the same number, dated the 16th of February 1946, remitted to the Tariff Board for investigation, the claim of the industry for assistance or protection during the transition period.

Terms of reference.

2. Under the terms of reference contained in the Resolution, dated the 3rd of November 1945, the Board has to satisfy itself:—

(1) that the industry is established and conducted on sound business lines; and

(2) (a) that, having regard to the natural or economic advantages enjoyed by the industry and its actual or probable costs, it is likely within a reasonable time to develop sufficiently to be able to carry on successfully without protection or State assistance, or

(b) that it is an industry, to which it is desirable in the national interest to grant protection or assistance and that the probable cost of such protection or assistance to the community is not excessive.

Where a claim for protection or assistance is found to be established that is, if condition (1) and condition (2)(a) or (b) are satisfied, the Board may recommend:—

(i) whether, at what rate and in respect of what articles, or class or description of articles, a protective duty should be imposed;

(ii) what additional or alternative measures should be taken to protect or assist the industry; and

(iii) for what period, not exceeding 3 years, the tariff or other measures recommended should remain in force.

In making its recommendations, the Board has to give due weight to the interests of the consumer in the light of the prevailing conditions and also consider how the recommendations affect industries using the articles in respect of which protection is to be granted.

Method of inquiry.

3. The Board issued a press communiqué on the 18th of October 1946, inviting associations or persons including producers, importers and consumers directly interested in the industry, who wished their views to be considered, to submit their representations to the Board. Provincial Governments and administrations were also addressed for their views on the application for protection. A list of those to whom questionnairs were issued and those from whom replies or memoranda were received is given in Appendix I.

Mr. C. C. Desai, Dr. Nazir Ahmad and Dr. H. L. Dey, Members of the Board, visited the Mysore Iron & Steel Works' ferro-silicon factory in Mysore City on the 12th of May 1947 and held informal discussions with the management of the concern about the difficulties and future prospects of the industry at Bhadravati on the 14th and 15th of May 1947. Mr. R. Sundaram, our Cost Accounts Officer, visited the factory at Mysore City on the 7th and 8th of April and again, accompanied by Mr. R. N. Kapur, our Technical Adviser, on the 25th of April 1947 and examined the cost accounts at Bhadravati from the 31st of March to the 6th of April and again from the 26th to the 29th of April 1947. Oral evidence of the representatives of producers, consumers, importers and others was taken at Ootacamund from the 26th to the 28th of May 1947. A list of those who attended the public hearing is given in Appendix II.

History of the industry.

4. Ferro-silicon is an essential ingredient in the manufacture of steel. There was no production of this material in the country before 1942, all our requirements being met from imports. Soon after the outbreak of the war, it was apprehended that imports of ferro-silicon might be appreciably cut down, thereby paralysing steel production in India. It was to provide against this possible danger that the Mysore Government, with the approval and assistance of the Government of India, put up the ferro-silicon plant at Mysore City as part of the Mysore Iron and Steel Works located at Bhadravati. Assistance of the Government of India was afforded in regard to the importation of machinery and equipment and the acquisition of controlled materials like steel. The main reason for setting up the ferro-silicon factory in Mysore City was the availability of a large block of electric power, which was not at the time obtainable at Bhadravati. The plant comprises two 1,500 K.V.A. furnaces, each capable of making approximately 900 tons of ferro-silicon of grade 70|75 per cent. per annum, and the factory was started on the 17th of May 1942. Though the total capacity of the furnaces is 1,800 tons of 70|75 per cent grade ferro-silicon, the actual production so far has been much smaller, the average annual output during the four years from 1942 to 1946 being about 1,000 tons. The firm explains this by saying that it never received orders to permit it to work both the furnaces and operate the plant at full production basis. The non-receipt of adequate orders by it was due to a series of unfavourable circumstances. First of all, when the plant went into operation, most of the steel manufacturers already held good stocks of ferro-silicon with them, and there were also outstanding orders placed abroad, with a consequent slackness in the demand for the indigenous product. Secondly, some time in 1944-45, the main power house of the plant was struck by lightning and production was completely stopped. As the management was unable at the time to say when production of ferro-silicon would be resumed in the factory, the steel works were allowed to place orders abroad to cover their requirements for a long period, so as to ensure against all possible contingencies. By the time these orders for imports were executed, the war itself came to an end and the demand for ferro-silicon in the country declined to some extent. Though the stoppage of production due to the accident in 1944-45 lasted for only 3 months, its effect was serious in that the factory did not receive a regular stream of orders to absorb its full output. Moreover, some steel works required grades of ferro-silicon

(The figures include all the grades used. Hence, the total and average values given are not those of any particular grade but of all the grades taken together.)

Sources of imports.

7. So far as we were able to ascertain, U.S.A., Canada, Australia, Norway and Sweden are the principal producers of ferro-alloys of all kinds. The two main sources of imports of ferro-silicon into India at present are Canada and Norway, Norway being the more important of the two and the Norwegian ferro-silicon being compartively cheaper.

Import control.

8. We were informed that since March 1946, Government have controlled the importation of ferro-silicon so as to give some relief to the indigenous industry. Under this control, any intending importer can get an import licence for only one ton of ferro-silicon, provided he simultaneously places orders for 2 tons of ferro-silicon with the Mysore factory.

Estimated demand.

9. As already stated, all the requirements of ferro-silicon in the country in the prewar period were met from imports. From the figures given in paragraph 6, it would appear that the prewar demand was in the neighbourhood of 1,500 tons per annum. The peak of the wartime consumption of about 3,500 tons was reached in 1943-44. The present demand is somewhere in the neighbourhood of 3,000 tons. In the light of all available evidence it is estimated that the demand for the next three years would be of the order of about 3,700 tons per annum, the principal consumers being as listed below:—

	Grades: 70/75% (tons)	45/50% (tons)	20/25% (tons)	Total (tons)
Tata Iron & Steel Co. Ltd.	1,800	..	700	2,500
Steel Corporation of Bengal	..	600	..	600
Ordnance Factories	50	..	120	170
Mysore Iron & Steel Works	200	..	..	200
Secondary steel producers	200	..	..	200
Total ..	2,250	600	820	3,670

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In the course of the oral evidence, we were told that Tatas have already got something like 9 months' stocks amounting to about 1,500 tons. The Steel Corporation of Bengal has also got stocks for about 9 months amounting to 455 tons. Assuming that the other principal consumers also have got about 9 months' stocks in hand, the total stocks in the country at the present moment may be estimated to be about 2,800 tons. The representatives of steel manufacturers informed us that it is their usual practice to maintain a minimum of 6 months' stocks, which in this case would amount to about 1,850 tons. On this basis, the surplus stocks available with the principal consumers would now be of the order of 900 tons, so which the Mysore factory was not producing at the time. As a cumulative result of all these circumstances, the firm could not run both the furnaces together except for very short periods occasionally. It may be stated that, during the war, the entire output of ferro-silicon came under the control of the Iron & Steel Controller, Government of India, who fixed its price and distributed it amongst the consumers. The Mysore Iron & Steel Works, of which the ferro-silicon factory is a subsidiary part, are owned by the Mysore State and managed through a Board of Management appointed by the Government of Mysore. The total capital invested upto the 30th of June 1946, is stated to be Rs. 4,78,555 and the number of workers employed is about 220.

The proposed new plant at Bhadravati.

5. It has been recognised from the outset that the location of the ferro-silicon factory in Mysore City was only an emergency arrangement dictated by the availability of a large block of electric power and that the plant should be shifted to Bhadravati as early as possible, not only because Bhadravati was the location of the Mysore Iron & Steel Works, but also because it had the advantage of the availability of cheaper charcoal and the possibility of more plentiful and cheaper electricity from the Jog Falls Works, which had been already sanctioned by the Mysore Government. The Company has now purchased from the U.K. a more efficient plant (released by the British Ministry of Supply) with a 12,000 K.V.A. furnace which is capable of producing 6|7,000 tons of ferro-silicon per annum. It is understood at the new plant has got provision for using 'soderberg' electrodes instead of threaded carbon electrodes used in the existing plant, and this should result in economy in the consumption of electrodes. We were informed that the new plant was expected to be installed by July 1948, but that it might not go into full production until the beginning of 1949. The Mysore Iron & Steel Works have stated that the additional capital required for the new plant and the necessary buildings, etc., would be about Rs. 12 lakhs.

Statistics relating to imports of ferro-silicon.

6. Statistics of imports of ferro-silicon are not shown separately in the Sea-borne Trade Annual. They are shown under ferro-alloys. Tatas, who are the biggest single consumer of ferro-silicon, have given the quantity and value of imported ferro-silicon, which they have used since 1938-39. These figures are given below :—

Year	Quantity in tons.	Total value Rs.	Average value per ton
		Rs. as. ps.	Rs. as. ps.
1938-39	1,472·85	4,37,774 8 0	297 3 8
1939-40	1,453·30	4,69,362 5 0	322 15 5
1940-41	1,574·80	9,82,515 7 0	623 8 0·5
1941-42	1,692·95	11,89,279 14 0	702 7 10
1942-43	1,813·15	14,92,931 12 0	823 6 3
1943-44	2,224·25	17,38,080 3 0	781 6 9
1944-45	1,323·30	9,74,000 0 0	736 0 7
1945-46	1,448·05	9,43,773 10 0	651 12 1

that the net demand for the next 12 months is likely to be about 2,800 tons.

Indigenous production.

10. Though the present capacity of the Mysore ferro-silicon plant is stated to be 1,800 tons of 70|75 per cent. grade or about 2,500 tons of all grades taken together, its actual production so far has been much smaller due to the reasons already explained in paragraph 4. The figures of output during the last few years are given below:—

Period	Tons
May 1942—June 1942	153
July 1942—June 1943	835
July 1943—June 1944	1,194
July 1944—June 1945	915*
July 1945—December	742
January to March 1946	256
Total	4,095

*(In 1944-45, there was a complete stoppage of production for about 3 months, due to the breakdown of the main power house of the plant.)

It will be seen from the figures given above that the average production per annum during the 4 years from 1942 to 1946 was about 1,000 tons and that the maximum monthly production was about 100 tons. We were told that due to the paucity of orders, the firm could only run one furnace for most of the time, which accounted for the low output. Besides, production was almost entirely confined to grades 70|75 per cent., which also accounted for the low output. During the six months July—December 1946, the output was 576 tons of ferro-silicon of all grades.

Raw materials and stores.

11. The main raw materials required for the manufacture of ferro-silicon are:—

(i) Silica rock called quartz or quartzite.
(ii) Steel scrap in the form of borings and turnings.
(iii) Coke or charcoal.

The most important of the consumable stores is carbon or graphite electrode. The raw materials are available in the country, but electrodes are imported. It is possible to use synthetic electrodes made out of indigenous materials. The new furnace ordered out by the Mysore Iron and Steel Works has provision for the use of such electrodes.

Rate for electricity.

12. The Mysore factory obtains its supply of electricity from the Mysore Government at the rate of 0.25 anna per unit, as against the rate of 0.46 anna per unit for sale to other industrial users. The value of this concession granted by the Mysore State up to June 1946 comes to over 7 lakhs of rupees. When the new plant is installed at Bhadravati in the second half of 1948, electric power will be available from the Jog Fall Works at a rate not higher than 0.154 anna per unit and quite probably at a rate of 0.1 anna per unit.

Process.

13. The process of making ferro-silicon is simple. Silica (SiO_2), a chemical compound of silicon, is reduced by carbon in the presence of iron in the electric arc furnace. The carbon combines with the oxygen of the silica and is given off as carbon monoxide and the silicon gets dissolved in the molten iron. The resulting product is ferro-silicon.

Uses of ferro-silicon.

14. Silicon is a powerful purifier like manganese and is used as such in the manufacture of steel. Pure silicon being very costly, its use is more or less prohibitive in steel making, while the cheaper iron-silicon alloy, known as ferro-silicon, is one of the most widely used ferro-alloys. It is an essential addition to the molten bath during the last stages of refining practically all types of steel, including many grades of carbon steel. Silicon has also the property of promoting grain size and decreasing hysteresis loss. These factors are important in magnetic circuits of electrical machinery, and ferro-silicon is employed in the manufacture of silicon steel sheets which are required for construction of fans, generators, armatures, transformers, etc. It is also used in the production of silico-manganese steels, which are required extensively for the manufacture of automobile and railway springs. In certain types of alloy and tool steels, silicon increases the ductility without loss of tensile strength or hardness. This property is particularly valuable in pneumatic tool steel. Silico-manganese alloy containing 15|20 per cent silicon and 55|60 per cent. manganese is produced in the electric arc furnace by melting known proportions of ferro-silicon and ferro-manganese. This alloy is particularly used in the manufacture of acid steels. Though many grades of ferro-silicon, ranging from 15 per cent. to 90 per cent., are known to be used for the manufacture of steel in different parts of the world, the demand in India is practically confined to three grades, *viz.*, 70|75 per cent., 45|50 per cent. and 20|25 per cent., by far the largest demand being for grade 70|75 per cent.

Quality of the indigenous product.

15. Tatas, who are by far the biggest consumers of ferro-silicon in the country, have stated that the quality of the indigenous product is as good as that of the imported article and that they have no prejudice whatsoever against the former. Most other consumers concur in this view. But a few of the consumers have commented adversely on the quality of the indigenous product. The Steel Corporation of Bengal, for example, has said that the indigenous product disintegrates, specially in damp weather, to a fine powder, thus involving wastage due to the powder remaining in the slag on the surface of the metal. Another firm has stated that while the imported material is in hard lump form and remains so for long periods, the indigenous product begins to break up into powder after a time. These small defects were admitted by the manufacturers of ferro-silicon, but they stated that they were taking steps to remove them. We are satisfied that the Indian-made ferro-silicon is practically as good as the imported product and that the few minor and rather immaterial defects of the product will be removed within a short time.

Estimate of cost of production and fair selling price.

16. The Board's Cost Accounts Officer, with the co-operation of the Technical Adviser, investigated the actual cost of production of ferro-silicon at the Mysore factory for the six months from July to December 1946 and prepared an estimate of cost of production for the year 1947-48. This estimate was discussed with the representatives of the industry during the public inquiry and modified in some small details. The estimate as finally adopted by the Board is given below:—

Estimated cost of production and fair selling price per ton of ferro-silicon. (70|75 *per cent.*)

Estimated Production :	70/75% grade		1,500 tons
	45/50% ,,		400 ,,
	20/25% ,,		550 ,,
		Total ..	2,450 tons

No.	Details of cost.	Unit.	Quantity.	Rate.	Amount.
				Rs.	Rs.
1	Materials—				
	Quartz	Tons	2·25	10 12 0	24·2
	Iron scrap	,,	0·31	24 14 0	7·7
	Charcoal	,,	1·59	87 0 0	138·3
	Total material cost				170·2
2	Electrodes	lbs.	240	0 5 4	80·0
3	Power	kw	11,000	0 0 3	171·8
4	Labour	..	..	..	55·9
5	Repairs and supplies	..	..	..	17·5
6	Establishment—				
	(*a*) Salaries of officers	..	..	..	0·4
	(*b*) Other establishments ..	..	..	..	13·7
7	Depreciation	..	..	..	15·6
8	Lining charges	..	..	..	7·0
9	Other overheads	..	..	..	26·8
10	Packing cost	..	..	..	37·8
11	Interest on working capital @ 4% ..	..	..	..	7·9
	Total cost of production ..	..	..	..	604·6
12	Return on Fixed Capital @ 10% ..	..	..	..	18·7
	Fair selling price (F.O.R. Mysore)	..	..	..	623·3
13	Freight to Tatanagar on ferro-silicon and on packing barrel	Rs. 111 0 0 6 0 0	..	..	117·0
					740·3
	Fair selling price, F.O.R. Tatanagar			or say	Rs. 740

Comments on the estimate.

17. (a) *Estimate of production.*—As already stated, the actual production of the factory during the last few years is considerably less than the capacity of the two furnaces. During the 6 months, July—December 1946, the actual production with one furnace working was 576 tons. On this basis and with 2 furnaces working all the time, the annual output would be about 2,300 tons. The output, however, varies according to the grades actually produced. In estimating the future production, we have thought it desirable to correlate the production programme with capacity on the one hand and demand on the other. Assuming that the factory has the capacity to produce roughly two-thirds of the total demand of the country for different grades of ferro-silicon, we have estimated that it will be able to produce approximately 1,500 tons of 70|75 per cent. grade, 400 tons of

45|50 per cent. grade and 550 tons of 20|25 per cent. grade. This estimate of the quantities of different grades likely to be produced is based upon the ascertained fact that the daily output is either 3 tons of 70|75 per cent. grade or 3.7 tons of 45|50 per cent. or 9 tons of 20|25 per cent. grade with one furnace running. The quantities given above for the different grades are based on the assumption that the factory will be run at least for 335 days in the year.

(b) *Depreciation.*—Depreciation has been allowed at statutory rates. The firm claimed that depreciation at the rate of 12½ per cent. on the block should be given on the ground that the present plant will become practically useless when the new plant is installed at Bhadravati during the second half of the year 1948. This claim has been rejected.

(c) *Interest on working capital.*—Working capital has been taken at 4 months' cost of production and interest on this has been allowed at 4 per cent. per annum. This works out to 1|75th of the cost of production.

(d) *Return on fixed capital.*—The fixed capital of the factory has been taken at Rs. 4,29,491. Return on this has been allowed at 10 per cent. per annum.

(e) *Freight.*—The freight on ferro-silicon from Mysore to Tatanagar is Rs. 111 and the freight on the weight of the packing barrel is Rs. 6, the total freight being Rs. 117. We understand that as a result of representations submitted to the Railway Board the freight is likely to be reduced to about Rs. 70 per ton from Mysore to Tatanagar in the near future. If and when the reduction in freight is granted, the selling price, f.o.r. Tatanagar, should be correspondingly reduced.

(f) *Disposal of the old plant.*—It was suggested by the management that any loss on the sale of the existing plant after its closure, should be written off over a period of five years. But in view of the uncertainty of the date of the disposal of the old plant and also its possible market price, it was decided that this issue should be left over for consideration at the time of estimating cost of production for the new plant to be installed at Bhadravati.

Fair selling prices of grades 45/50% and 20/25%.

18. The Mysore factory has not so far regularly produced 45|50 per cent. and 20|25 per cent. grades for the market. Consequently, it was not possible for the Board to investigate the cost of production of these grades. But, since there is considerable demand in the country for these grades, the firm proposes to produce these grades also regularly for the market in the future. In the course of the public inquiry it was suggested by both producers and consumers that the Board should fix fair selling prices for these grades also. In the absence of cost data, such fair selling prices could be fixed by reference to the current price margins between the roughly corresponding grades of imported ferro-silicon. The latest figures of prices as given by the Department of Industries and Supplies, Government of India, are as follows :—

Landed cost inclusive of duty.

	Norway Rs.	Canada Rs.
75% grade	**520**	**651**
50/52% grade	**492**	**442**
30% grade	**365**	**377**

The figures show that the price margin between 75 per cent. and 50|52 per cent. grades of the Norwegian ferro-silicon is Rs. 28 per ton, whereas in the case of the Canadian ferro-silicon the price margin between the two grades comes to Rs. 209 per ton. Again, the difference between 75 per cent. grade and 30 per cent. grade of Norwegian ferro-silicon is Rs. 255 per ton, whereas in the case of Canadian ferro-silicon it is Rs. 274 per ton. As a result of discussion with the representatives of producers and consumers of ferro-silicon in the country, it was agreed that the fair selling prices of 45|50 per cent. grade and 20|25 per cent. grade of indigenous ferro-silicon should be fixed at Rs. 503 and Rs. 470, respectively, as compared with Rs. 623 for grade 70|75 per cent. f.o.r. Mysore.

Future cost of production.

19. The new plant at Bhadravati is expected to go into full production towards the end of 1948 or the beginning of 1949. With this efficient plant it is expected that the cost of production will be reduced considerably. With an assumed output of about 3,500 tons of 70|75 per cent grade and on the basis of current prices of materials and the present level of wages and salaries, the estimated future cost of production would be about Rs. 510 per ton. In arriving at this figure, we have taken the charge for electric power at 0.154 of an anna per unit. If, as is anticipated, the electric current is available in the near future at 0.1 anna per unit, there will be a further reduction in cost by about Rs. 37 per ton. The freight from Bhadravati to Tatanagar is also likely to be reduced in the near future to about Rs. 70 per ton. If these two factors materialise, the fair selling price, f.o.r. Tatanagar, would come to about Rs. 543 per ton. The present duty-paid landed cost of the imported material (*vide* paragraph 21) is Rs. 554 per ton, f.o.r. Tatanagar. It can, therefore, be assumed that, with the new plant at Bhadravati going into full production, the indigenous producer will be in a position successfully to compete with the imported material with the help of something like the present revenue duty of 18¾ per cent. *ad valorem*.

Existing rate of duty.

20. Ferro-silicon falls under item No. 63(1) of the First Schedule to the Indian Customs Tariff. An extract from the 27th issue of the Indian Customs Tariff is given below :—

Item No.	Name of article	Nature of duty.	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of		
				The U.K.	A British Colony.	Burma.
63(1)	Iron alloys, viz., ferro-maganese, ferro-silicon, ferro-chrome, spiegeleisen and the like as commonly used for steel making.	Revenue	1 ¾ *ad valorem*.	..	..	Free.

C. i. f. prices and landed cost.

21. The latest figures of c.i.f. prices and landed costs for Norwegian ferro-silicon of 70|75 per cent. grade are given below :—

	Rs.
C.i.f. price per ton	433.5
Customs duty at 18.75 per cent. ..	81.3
Clearing charges	5.4
Landed cost	520.2
Railway freight from Calcutta to Tatanagar	33.7
Cost f.o.r. Tatanagar	553.9 or, say, Rs. 554.

The recent c.i.f. prices and landed costs of imported ferro-silicon of different grades are given in Appendix III, from which it will be seen that in 70|75 per cent. and 20|25 per cent. grades, Norway is the chief competitor.

Comparison of the cost of imported and indigenous ferro-silicon.

22. (a) *Imported ferro-silicon,* 70|75 *grade.*—

	Rs.
C.i.f. price per ton	433·5
Landing charges	5·4
Landed cost without duty	438·9
Freight to Tatanagar	33·7
Ex-duty landed cost, f.o.r. Tatanagar	472·6
(*b*) *Indigenous ferro-silicon, 70/70% grade.*	
Fair selling price per ton	623·2
Freight to Tatanagar	117·0
Cost, f.o.r. Tatanagar	740·2
(*c*) *Difference between the two figures* (*a*) *and* (*b*)	267·6

The import duty required to cover the difference between the two costs is 61|71 per cent. *ad valorem* (i.e., Rs. 267.6 as percentage of Rs. 433.5). present duty is 18.75 per cent. The additional duty required for the purpose would, therefore, be 42.96 per cent. or say, 43 per cent. *ad valorem.*

Protection recommended.

23. (a) *Scheme of protection.*—As already mentioned in paragraph 19, the new plant at Bhadravati is expected to go into full production by January 1949. For obtaining the necessary data required for the preparation of an estimate of future cost of production with a view to comparing it with the landed cost of import, and thus determining the quantum of protection, it is essential that the factory concerned should be worked nearly to its full capacity for at least one year. This condition is not likely to be fulfilled

सत्यमेव जयते

before the end of 1949. Under these circumstances, we recommend that the ferro-silicon industry should be protected up to the 31st of March 1950 and that the present revenue duty of 18¾ per cent. should be converted into a protective duty at the same rate. In view of our estimate of the selling price of ferro-silicon produced in the existing plant, this rate of duty will not protect the industry for the present. With a view to providing for this interregnum period, we recommend the continuance of the present import control. Ordinarily, import control as a method of protection is undesirable. Nevertheless, we recommend this method in this case because the period for which the import control is to remain in operation is very short, and it is a method which is in force at present and which is well understood by both the producers and the consumers. Moreover, since the competitive position of the industry would have improved by the beginning of 1949, when production is started with the new plant, the continuance of the present practice of import control cannot be considered to be very objectionable. We, therefore, recommend that the present import control should be continued up to the 31st of March 1949. The net result of our recommendation is in practice a stand-still arrangement until production starts with the new plant at Bhadravati. In this connection, we were informed during the public inquiry that it was not clear whether the present import control applied to grades other than 70|75 per cent. Since our entire scheme of protection is based upon the assumption that the ratio of 2 : 1 would be applicable to all the three grades of ferro-silicon, *viz.*, 70|75, 45|50, and 20|25 per cent., required in the country, we recommend that the import control should apply to all the grades. In those cases, however, where the indigenous manufacturer is found to be unable, for some reason or other, to satisfy the requirements of the consumers in respect of any of the above grades of ferro-silicon within a reasonable period of time, the import control should be relaxed to the necessary extent.

(b) *Exemption of the Lahore region from import control.*—A representative of the steel manufacturers of the Lahore area informed the Board at the public inquiry that the railway freight on ferro-silicon from Mysore to Lahore is about Rs. 400 per ton, whereas the freight from Karachi to Lahore is only Rs. 150 per ton, and claimed on that ground that the steel manufacturers of the area should be exempted from the import control, thereby being enabled to get all their requirements of ferro-silicon through imports. It was estimated that the consumption of ferro-silicon in that area would be of the order of 50 tons per annum. The representatives of the ferro-silicon industry agreed that the request was a reasonable one and that they had no objection to such exemption being granted to the Lahore region. We, therefore, recommend that the steel manufacturers of the Lahore area should be exempted from import control in respect of the ferro-silicon required by them.

(c) *Ceiling prices to be fixed.*—Since import control implies that the domestic manufacturer has a partial monopoly in the home market, it is desirable that it should be accompanied by a system of price control. We recommend that Government should fix ceiling prices for the three grades of ferro-silicon on the basis of the estimate of cost of production and fair selling price given by us in paragraph 16 and 18. This estimate should remain valid for the whole period of import control, *i.e.*, up to the 31st of March 1949.

(d) *A separate heading* for ferro-silicon should be opened in the Indian Customs Tariff and in the Annual Sea-borne Trade Account. If this recommendation is accepted, the revised Tariff Schedule should be as follows :—

Item No.	Name of article.	Nature of duty.	Standard rate of of duty.	Preferential rate of duty if the article is the produce or manufacture of		
				The U. K.	A British Colony.	Burma
63(1)	Iron alloys, viz., ferro-manganese, ferro-chrome, spiegeleisen and the like as commonly used for steel making.	Revenue	18¾% *ad valorem.*	..	..	Free.
63(1a)	Ferro-silicon ..	Protective	18¾% *ad valorem.*	..	..	Free.

Refund of import duty on machinery.

24. We recommend that the duty on all future imports of machinery required for the ferro-silicon industry should be refunded.

Eligibility for protection.

25. Notwithstanding its unsuitable location in relation to market, we consider that the industry, is established and conducted on sound business lines especially in the context of war-time difficulties. As regards the ability of the industry to become independent of protection within a reasonable period of time, it is not possible for us to give any definite opinion at the present stage. But, if the estimate of future cost of production for the proposed new plant at Bhadravati, vide paragraph 19, proves to be even roughly correct, the industry should be able to stand on its own legs within a fairly short period of time. We, therefore, consider that the industry is eligible for protection.

Summary of conclusions and recommendations.

26. Our conclusions and recommendations are summarised as under :—

(i) The prewar demand for ferro-silicon in the country was in the neighbourhood of 1,500 tons a year. The present demand is about 3,000 tons. During the next 3 years, the estimated demand will be of the order of 3,700 tons a year, but owing to the existence of excess stocks in the country, the net demand for the next 12 months is likely to be about 2,800 tons (Paragraph 9).

(ii) The present capacity per annum of the Mysore ferro-silicon plant is about 2,500 tons of all grades of ferro-silicon taken together, but due to lack of demand and other circumstances, the average annual output during the four years from 1942 to 1946 was about 1,000 tons. (Paragraph 10).

(iii) Most of the raw materials of the industry are available in the country. Electrodes are imported at present, but it is possible to use synthetic electrodes made out of indigenous materials. (Paragraph 11).

(iv) Ferro-silicon is used as a purifier in the manufacture of all kinds of steel. The demand in the country is practically confined to 3 grades of ferro-silicon, viz., 70|75 per cent. grade, 45|50 per cent. grade and 20|25 per cent. grade, by far the largest demand being for grade 70|75 per cent. (Paragraph 14).

(v) The Indian-made ferro-silicon is practically as good as the imported product and the few minor defects can be removed within a short time. (Paragraph 15).

(vi) The estimated fair selling price of 70|75 per cent. grade ferro-silicon, f.o.r. Mysore, would be Rs. 623.3 per ton and, f.o.r. Tatanagar on the basis of the present rate of freight Rs. 740 per ton. (Paragraph 16).

(vii) The fair selling prices of 45|50 per cent. grade and 20|25 per cent. grade of indigenous ferro-silicon should be fixed at Rs. 503 and Rs. 470 per ton respectively, f.o.r. Mysore. (Paragraph 18).

(viii) From the beginning of 1949 onwards the fair selling price, f.o.r. Bhadravati, is roughly estimated to be Rs. 509 per ton. This figure is likely to be reduced to Rs. 472 per ton, if and when electricity is supplied, as anticipated by the firm, at 0.1 anna per unit. Further, if and when the freight from Bhadravati to Tatanagar is reduced to about Rs. 70 per ton, as expected by the firm in the near future, the fair selling price, f.o.r. Tatanagar, would come down to Rs. 542, which is just less than the present duty-paid landed cost of the imported material, *viz.,* Rs. 554 per ton, f.o.r. Tatanagar. (Paragraph 19).

(ix) The ferro-silicon industry should be protected up to the 31st March 1950 and the present revenue duty of 18¾ per cent. should be converted into a protective duty at the same rate. And the present system of import control should be continued up to the 31st March 1949. The control should apply to all grades of ferro-silicon, subject to exceptions indicated by us. (Paragraph 23(a)).

(x) The claim made by the steel manufacturers of the Lahore region for exemption from import control in respect of ferro-silicon is reasonable and should be granted. (Paragraph 23 (b)).

(xi) Ceiling prices should be fixed for the three grades of ferro-silicon on the basis of our estimate of fair selling prices, which should remain valid for the whole period of import control, *i.e.* up to the 31st of March 1949. (Paragraph 23(c)).

i) A separate heading should be opened for ferro-silicon in the Customs Tariff and in Annual Sea-borne Trade account. h 23(d)).

(xiii) The duty on all future imports of machinery required for the ferro-silicon industry should be refunded. (Paragraph 24).

(xiv) The industry has established its eligibility for protection. (Paragraph 25).

Acknowledgement.

27. The Board wishes to thank Mr. R. J. Perry, Chief Commercial Manager, Madras and Southern Mahratta Railway, Mr. Jang Bir Singh, Development Officer, Directorate-General of Industries and Supplies, Government of India, Mr. D. D. Kamat, Director (Raw Materials), the Iron and Steel Controller's Office, Calcutta, Mr. Ahmadullah, Secretary to the Board, Mr. R. N. Kapur, Board's Technical Adviser and Mr. R. Sundaram, Cost Accounts Officer for help in connection with the inquiry.

SHANMUKHAM CHETTY, *President*

C. C. DESAI, *Member.*

NAZIR AHMAD, *Member.*

H. L. DEY, *Member.*

M. AHMADULLAH, *Secretary.*

OOTACAMUND,

Dated 18*th June* 1947.

सत्यमेव जयते

APPENDIX I.

List of firms or bodies to whom the questionnaire was issued and of those who replied to it.

Those who have not answered the questionnaire are marked with an asterisk.

A. *PRODUCERS.*

The Mysore Iron & Steel Works, Bhadravati.

B. *CONSUMERS.*

1. Bhartia Electric Steel Co., Ltd., Calcutta.
2. Burn & Co., Ltd., Howrah.
3. Cooper Engineering Works, Satara.
4. Delhi Cloth & General Mills Co., Ltd., Subzi Mandi, Delhi.
*5. G.T.R. Co., Ltd., 6, Clive St., Calcutta.
*6. Indian Hume Pipe Co., Ltd., Wadala, Bombay.
7. Indian Malleable Castings, Ltd., Calcutta.
8. Iron & Steel Industries of India Ltd., P2, Mission Row Extension, Calcutta.
9. Jamshedpur Engineering & Machine Mfg. Co., Ltd., Tatanagar.
10. Jay Engineering Works, Calcutta.
11. Jessop & Co., Ltd., 93, Clive St., Calcutta.
12. J. K. Iron & Steel Co., Ltd., Cawnpore.
13. Kirloskar Bros., Ltd., Kirloskarwadi.
14. Kumardhubi Engineering Works Ltd., Kumardhubi.
15. Metal & Steel Factory, Ishapore, 24-Parganas, Bengal.
16. Mukund Iron & Steel Works, Badami Bagh, Lahore.
17. Mysore Kirloskar Ltd., Harihar.
18. National Iron & Steel Works, Belur, Howrah.
19. Ordnance Factory, Cawnpore.
20. Ordnance Factory, Muradnagar (U.P.).
21. Renwick & Co., Ltd., Kushtia, (B.A. Rly.).
22. Richardson & Cruddas Iron Works, Byculla, Bombay.
23. The Singh Engineering Works, Cawnpore.
24. The Steel Corporation of Bengal Ltd., Asansol.
25. The Steel & General Mills Co., Ltd., Moghalpura, Lahore.
26. The Tata Iron & Steel Co., Ltd., Bombay.
27. The Controller of Stores, E.I.R., Calcutta.
28. The Controller of Stores, B.B. & C.I.Rly., Mahalaxmi, Bombay.
29. The Controller of Stores, Oudh & Tirhut Rly., Samastipur.

C. *IMPORTERS.*

1. Ahmed A. Fazalbhoy, Bombay.
2. Ahmed A. Fazalbhoy, Calcutta.
3. Ferro-Alloys & Metals Ltd., Bombay.
4. Ferro-Alloys & Metals Ltd., Calcutta.

Reply sent by M|s Alloys & Metals Ltd., Bombay, stands for all the four in bracket.

*5. The East Asiatic Co. (India) Ltd., Madras.
6. Industrial Importers & Engineers (India) Ltd., Calcutta.
*7. The Indian Standard Metal Co., Bombay.
*8. Sepulchre & Co., Ltd., Calcutta.
*9. William Jacks & Co., Ltd., Calcutta.

APPENDIX II.

List of persons who attended the public hearing on the 26th, 27th and 28th of May 1947.

PRODUCERS—

Mr. D. V. Krishna Rao ..	Mysore Iron and Steel Works, Bhadravati.
Mr. P. R. Balakrishnan ..	Mysore Iron and Steel Works, Bhadravati and Mysore Government.
Mr. C. G. Chandrasekhar ..	The Indian Steel Manufacturers' Association, Calcutta.

CONSUMERS—

Mr. A. Rajagopalan. Mr. S. K. Nanavati. Mr. Mahischandra. Mr. S. N. Sircar.	The Tata Iron & Steel Co., Ltd., Jamshedpur.
Mr. I. N. Gandhi	Steel & General Mills Co., Ltd., Moghalpura, Lahore.

GOVERNMENT REPRESENTATIVES—

Mr. R. J. Perry	Chief Commercial Manager, M. & S. M. Railway, Madras, representing Railway Board.
Mr. Jangbir Singh	Development Officer, D.G.I. & S., New Delhi.
Mr. D. D. Kamat	Director, Raw Materials, Iron and Steel Control, Calcutta.

APPENDIX III.

RECENT C.I.F. PRICES AND LANDED COSTS OF FERRO-SILICON

I. 75-80 *per cent. ferro-silicon.*

Sources of information	Country of origin.	Date	C.I.F.	Customs duty.	Clearing and other charges	Landed cost	Selling price	Cost per ton f.o.r. Tatanagar
			Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Industrial Importers & Engineers (India). Ltd. Calcutta.	Norway	1946	440 0 0	82 8 0	10 12 0	533 4 0	560 0 0	..
Industries & Supplies* Department	,,	Recent	433 10 0	86 12 0	(included under customs duty)	520 6 0	..	554 1 0
Ferro-Alloys and Metals Ltd. Bombay.	Canada	1946	545 14 6	102 5 7	13 15 5	662 3 6	..	..
Industries & Supplies* Department	,,	Recent	542 8 0	108 8 0	(Included under customs duty).	651 0 0	..	684 11 0

(*Figures adjusted to 75 per cent Silicon Content.)

II. 45 52 *per cent. ferro-silicon.*

Sources of information	Country of origin.	Date	C.I.F.	Customs duty.	Clearing and other charges	Landed cost	Selling price	Cost per ton f.o.r. Tatanagar
Industries & Supplies Department	Norway (52%)	Recent	410 1 7	82 0 0	(Included under Customs duty).	492 1 7	..	525 12 9
Do. ..	Canada (50%)	Do.	368 0 0	73 9 7	Do.	441 9 7	..	475 4 9

III. 25|30 *per cent ferro-silicon.*

Sources of information	Country of origin.	Date	C.I.F.	Customs duty.	Clearing and other charges	Landed cost	Selling price	Cost per ton f.o.r. Tatanagar
Industries & Supplies Department	Norway (30%	Recent	304 8 0	60 14 1	(included under Customs duty).	365 6 4	..	399 1 6
Do. ..	Canada (30%)	Do.	314 5 10	62 12 3	Do.	377 2 1	..	410 14 8

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